

IN THE CLAIMS

1. (Currently Amended) A radio receiver, comprising:

a front-end circuit operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band;

an analog to digital converter coupled to said front-end circuit, said analog to digital converter operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band; and

a digital processing system coupled to said analog to digital converter, said digital processing system operable to receive said digital signal and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of channels within said frequency band.

2. (Original) The radio receiver of claim 1, wherein said digital processing system generates a single output signal comprising a time-domain multiplexed serial data link.

3. (Original) The radio receiver of claim 2, further comprising a controller coupled to said digital processing system, said controller operable to receive said time-domain multiplexed serial data link and generate a plurality of signals for transmission to a plurality of end devices.

4. (Original) The radio receiver of claim 1, wherein said digital processing system generates a plurality of output signals comprising a plurality of signals for transmission to a plurality of end devices.

5. (Original) The radio receiver of claim 1, wherein said front-end circuit comprises an antenna circuit operable to receive said radio signals.

6. (Original) The radio receiver of claim 5, wherein said front-end receiver further comprises an amplifier circuit operable to amplify said received radio signals.

7. (Original) The radio receiver of claim 5, wherein said front-end circuit further comprises a filter circuit operable to filter said received radio signals.

8. (Previously Presented) The radio receiver of claim 7, wherein said filter circuit comprises a filter selected from the group consisting of high-pass filter, low-pass filter, band-pass filter, notch filter, and combinations thereof.

9. (Original) The radio receiver of claim 5, wherein said front-end circuit further comprises an intermediate frequency mixing circuit operable to translate said received radio signals to an intermediate frequency band.

10. (Cancelled)

11. (Previously Presented) The radio receiver of claim 1, wherein said digital processing system further comprises a digital down converter operable to select said at least one of said channels within said frequency band, wherein said digital down converter selects said at least one of said channels according to configurable channel selection parameters.

12. (Original) The radio receiver of claim 11, wherein said configurable channel selection parameters are software configurable.

13. (Previously Presented) The radio receiver of claim 11, wherein said configurable channel selection parameters are selected from the group consisting of channel frequency, channel bandwidth, and combinations thereof.

14. (Previously Presented) The radio receiver of claim 1, wherein said digital processing system comprises a digital signal processor, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal, wherein said digital signal processor extracts said information from said at least one of said selected channels according to configurable channel decoding parameters.

15. (Original) The radio receiver of claim 14, wherein said configurable channel decoding parameters are software configurable.

16. (Previously Presented) The radio receiver of claim 14, wherein said configurable channel decoding parameters are selected from the group consisting of channel frequency, channel modulation scheme, channel bandwidth, channel information format, and combinations thereof.

17. (Cancelled)

18. (Currently Amended) A radio receiver, comprising:

at least one front-end circuit group comprising a plurality of front-end circuits, wherein each of said front-end circuits is operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band;

at least one analog to digital converter coupled to said at least one front-end circuit group, said analog to digital converter operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band; and

a digital processing system coupled to said at least one analog to digital converter, said digital processing system operable to receive said digital signal from said analog to digital converter and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said channels within said frequency band of at least one of said front-end circuits, said digital processing system comprising:

a digital down converter operable to select said at least one of said channels within said frequency band of at least one of said front-end circuits; and

a digital signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal;

wherein said radio signals received by anyone of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits.

19. (Original) The radio receiver of claim 18, wherein said digital processing system is operable to generate a plurality of output signals, wherein each of said output signals corresponds to at least one of said channels within said frequency band of at least one of said front-end circuits.

20. (Cancelled)

21. (Original) The radio receiver of claim 18, wherein each of said front-end circuits

comprises an antenna circuit operable to receive said radio signals.

22. (Original) The radio receiver of claim 21, wherein at least one of said front-end circuits further comprises an amplifier circuit operable to amplify said received radio signals.

23. (Original) The radio receiver of claim 21, wherein at least one of said front-end circuits further comprises a filter circuit operable to filter said received radio signals.

24. (Original) The radio receiver of claim 21, wherein at least one of said front-end circuits further comprises an intermediate frequency mixing circuit operable to translate said received radio signals to an intermediate frequency band.

25. (Cancelled)

26. (Previously Presented) The radio receiver of claim 18, wherein said digital down converter selects said at least one of said channels according to software configurable channel selection parameters.

27. (Previously Presented) The radio receiver of claim 18, wherein said digital signal processor extracts said information from said at least one of said selected channels according to software configurable channel decoding parameters.

28. (Original) The radio receiver of claim 18, comprising a plurality of front-end circuit groups and a plurality of corresponding analog to digital converters, wherein said digital processing system is operable to receive a plurality of digital signals from said analog to digital converters and generate at least one output signal corresponding to at least one of said channels within said frequency band of at least one of said front-end circuits of at least one of said front-

end circuit groups.

29. (Currently Amended) A radio receiver, comprising:

a plurality of front-end circuits each of which comprises an antenna circuit operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band;

a plurality of analog to digital converters each of which is coupled to at least one of said front-end circuits, wherein each of said analog to digital converters is operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band; and

a digital processing system coupled to each of said analog to digital converters, said digital processing system operable to receive said digital signals from said analog to digital converters and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said channels within said frequency band of at least one of said front-end circuits, said digital processing system comprising:

a digital down converter operable to select said at least one of said channels within said frequency band of at least one of said front-end circuits;
and

a digital signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal;

wherein said radio signals received by anyone of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits.

30. (Original) The radio receiver of claim 29, wherein at least one of said front-end circuits further comprises an amplifier circuit operable to amplify said received radio signals.

31. (Original) The radio receiver of claim 29, wherein at least one of said front-end circuits further comprises a filter circuit operable to filter said received radio signals.

32. (Original) The radio receiver of claim 29, wherein at least one of said front-end circuits further comprises an intermediate frequency mixing circuit operable to translate said received radio signals to an intermediate frequency band.

33. (Original) The radio receiver of claim 29, wherein at least one of said analog to digital converters is operable to receive analog signals from a plurality of front-end circuits and convert said analog signals to a digital signal.

34. (Currently Amended) A method of receiving radio signals, comprising:

providing a radio receiver comprising: one or more front-end circuits;

one or more analog to digital converters coupled to said one or more front-end circuits; and

a digital processing system coupled to said one or more analog to digital converters, said digital processing system comprising:

a digital down converter; and

a digital signal processor coupled to said digital down converter;

receiving at a plurality of the one or more front-end circuits a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, wherein said radio signals received by any one

of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits;

generating an analog signal from said received radio signals, said analog signal simultaneously carrying a plurality of channels within said frequency band;

converting said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band to thereby digitize said plurality of channels within said frequency band; and

substantially simultaneously generating from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said digitized channels within said frequency band.

35. (Original) The method of claim 34, further comprising amplifying said received radio signals.

36. (Original) The method of claim 34, further comprising filtering said received radio signals.

37. (Original) The method of claim 34, further comprising mixing said received radio signals to an intermediate frequency band.

38. (Original) The method of claim 34, wherein said output signal is generated by:
applying software configurable channel selection parameters to said digital signal to select at least one of said digitized channels within said frequency band;
extracting information from said at least one of said selected digitized channels according to software configurable channel decoding parameters; and
conveying said extracted information within said output signal.

39. (Original) The method of claim 38, wherein said output signal comprises a time-domain multiplexed serial data link.

40. (Original) The method of claim 39, further comprising generating a plurality of signals from said time-domain multiplexed serial data link for transmission to a plurality of end devices.

41. (Original) The method of claim 34, wherein a plurality of output signals are generated each of which corresponds to at least one of said digitized channels within said frequency band.

42. (Original) The method of claim 41, wherein said plurality of output signals comprise a plurality of signals for transmission to a plurality of end devices.

43. (Currently Amended) A radio receiver, comprising:

a plurality of front-end circuits each of which is operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate analog signals that are combined into a composite analog signal simultaneously carrying a plurality of channels within said frequency band;

a single analog to digital converter operable to convert the composite analog signal to a single digital signal simultaneously carrying said plurality of channels within said frequency band;

a digital processing system operable to receive said digital signal from said analog to digital converter and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said

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channels within said frequency band, said digital processing system comprising:

a digital down converter operable to select said at least one of said channels within said frequency band; and

a digital signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal.

44. (Original) The radio receiver of claim 43, wherein said output signal comprises a time-domain multiplexed serial data link.

45. (Previously Presented) The radio receiver of claim 44, further comprising a controller coupled to said digital processing system, said controller operable to receive said time-domain multiplexed serial data link and generate a plurality of signals for transmission to a plurality of end devices.

46. (Currently Amended) An aviation-band radio receiver, comprising:

a front-end circuit operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band, wherein said frequency band comprises aviation-band radio signals;

an analog to digital converter coupled to said front-end circuit, said analog to digital converter operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band; and

a digital processing system coupled to said analog to digital converter, said digital processing system operable to receive said digital signal and substantially simultaneously

generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said plurality of channels within said frequency band, said digital processing system comprising:

a digital down converter operable to select said at least one of said plurality of channels within said frequency band; and

a digital signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said plurality of channels and generate said at least one output signal, wherein said digital signal processor controls said digital down converter.

47. (Previously Presented) The aviation radio receiver of claim 46, wherein said aviation-band radio signals comprise aviation navigation radio signals.

48. (Previously Presented) The aviation radio of claim 46, wherein said aviation-band radio signals comprise aviation communication radio signals.

49. (Previously Presented) The aviation radio of claim 46, wherein said aviation-band radio signals comprise aviation navigation and aviation communication radio signals.

50. (Previously Presented) The aviation radio receiver of claim 49, wherein said digital processing system generates a single output signal comprising a time-domain multiplexed serial data link.

51. (Previously Presented) The aviation radio receiver of claim 50, further comprising a controller coupled to said digital processing system, said controller operable to receive said time-domain multiplexed serial data link and generate a plurality of signals for transmission to a plurality of end devices.

52. (Previously Presented) The aviation radio receiver of claim 46, wherein said digital processing system generates a plurality of output signals comprising a plurality of signals for transmission to a plurality of end devices.

53. (Currently Amended) An aviation radio receiver comprising:

at least one front-end circuit group comprising a plurality of front-end circuits, wherein each of said front-end circuits comprises an antenna circuit operable to receive radio signals and an amplifier circuit operable to amplify radio signals, said front-end circuits operable to receive a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band, wherein said radio signals comprise aviation navigation and aviation communication radio signals;

at least one analog to digital converter coupled to said at least one front-end circuit group, said analog to digital converter operable to receive said analog signal from said front-end circuits and convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band; and

a digital processing system coupled to said at least one analog to digital converter, said digital processing system operable to receive said digital signal from said analog to digital converter and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said channels within said frequency band of at least one of said front-end circuits, said digital processing system comprising:

a digital down converter operable to select said at least one of said channels within said frequency band of at least one of said front-end circuits; and a digital

signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal;

wherein said radio signals received by anyone of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits.

54. (Previously Presented) The aviation radio receiver of claim 53, wherein said digital processing system is operable to generate a plurality of output signals, wherein each of said output signals corresponds to at least one of said channels within said frequency band of at least one of said front-end circuits.

55. (Cancelled)

56. (Cancelled)

57. (Currently Amended) A method of receiving aviation-band radio signals, comprising:

providing a radio receiver comprising:

a plurality of front-end
circuits;

one or more analog to digital converters coupled to said plurality of front-end circuits; and

a digital processing system coupled to said one or more analog to digital converters, said digital processing system comprising:

a digital down converter; and

a digital signal processor coupled to said digital down converter;

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receiving at the plurality of front-end circuits a plurality of radio signals, transmitted across a frequency band, by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, said radio signals comprising aviation navigation and aviation communication radio signals, wherein said radio signals received by anyone of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits;

generating an analog signal from said received radio signals, said analog signal simultaneously carrying a plurality of channels within said frequency band;

converting said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band to thereby digitize said plurality of channels within said frequency band; and

substantially simultaneously generating from the digital signal a plurality of aviation-specific output signals corresponding to a plurality of said digitized channels within said frequency band.

58. (Previously Presented) The method of claim 57, further comprising mixing said received radio signals to an intermediate frequency band.

59. (Previously presented) The method of claim 58, wherein said output signal is generated by:

applying software configurable channel selection parameters to said digital signal to select at least one of said digitized channels within said frequency band;

extracting information from said at least one of said selected digitized channels according to software configurable channel decoding parameters; and

conveying said extracted information within said output signal.

60. (Previously Presented) The radio receiver of claim 1 wherein said digital processing system is operable to receive said digital signal and substantially simultaneously generate a plurality of output signals corresponding to more than one of said plurality of channels within said frequency band.